

**APPLICATION FOR CERTIFICATE OF NEED:**

**TRIMONT AREA WIND FARM PROJECT**

**Martin and Jackson Counties, Minnesota**

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# Application for Certificate of Need: Trimont Area Wind Farm Project Martin and Jackson Counties, Minnesota

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### LEGF Certificate of Need Rule Cross-References

Rule Ref. No.	Title	CON Application Section	Notes
7849.0100	Purpose of Criteria		No data requested
7849.0110	Consideration of Alternatives		No data requested
7849.0120	Criteria	2.1	
Subpart A	Result of Denial	2.2.1	
Subpart B	No More Reasonable and Prudent Alternative Demonstrated	2.2.2	
Subpart C	Project's Benefits to Society	2.2.3	
Subpart D	Compliance with Federal, State, and Local Policy	2.2.4	
7849.0200	Application Procedures and Timing		No data requested
7849.0210	Filing Fees and Payment Schedule	1.1.2	
7849.0220	Contents of Application	Table of Contents	
7849.0230	Environmental Report		No data requested at this time
7849.0240	Project Relationship to Socioeconomic Considerations	2.3	
Subpart 1	Socially Beneficial Uses of Project Output	2.3.1	
Subpart 2	Additional Considerations	2.3.2, 2.3.3	
7849.0250(A)	Description of Proposed Facility	1.1(general), 2.0, 3.0, 3.1, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5	
7849.0250(B)	Availability of Alternatives	3.2, 3.2.1, 3.2.2	
7849.0250(C)	Discussion of Facility and Alternatives	3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.3.5, 3.3.5, 3.3.6, 3.3.7, 3.3.8	
7849.0250(D)	Map of System	3.6	
7849.0250(E)	Other Facility Information	3.7, 3.7.1, 3.7.2, Table 2, 3.7.3, 3.8 (other permits and filings), Table 3, 3.8.1, 3.8.2, 3.8.3, 3.8.4, 3.8.5	
7849.0260	Description of LHVTL and Alternatives	Not Applicable	Not Applicable
7849.0270	Peak Demand and Annual Electrical Consumption Forecast	4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6	
7849.0280	System Capacity	5.0	
7849.0290	Conservation Programs	6.0	

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<b>Rule Ref. No.</b>	<b>Title</b>	<b>CON Application Section</b>	<b>Notes</b>
7849.0300	Consequences of Delay	7.0	
7849.0310	Environmental Information Required	3.4, 3.5	

# **1.0 Introduction and Executive Summary**

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Trimont Area Wind Farm, LLC (“TAWF LLC”), respectfully requests that the Minnesota Public Utilities Commission (the “Commission”) make a finding of need and issue an order in connection with this Application. TAWF LLC requests that the Commission grant a Certificate of Need for a “large energy facility” as defined in Minnesota Statutes Section 216B.2421, subd.2 (1) (2002), as part of a comprehensive plan to construct a 100 MW large wind energy conversion system in Martin and Jackson Counties (the “Project”). This Application is submitted pursuant to and in accordance with Minnesota Statutes Section 216B.243 and Minnesota Rules Chapter 7849 (2001).

## **1.1 Introduction**

TAWF LLC files this Application for a Certificate of Need as a result of being selected by Great River Energy (“GRE”) to provide an addition to GRE’s renewable energy portfolio. The Project is not exempt under Minnesota Statutes Section 216B.2422, subd. 5. However, TAWF LLC respectfully submits that the need analysis required for the Commission’s approval of this Application is satisfied by GRE’s selection of TAWF LLC through GRE’s renewables competitive bidding process, which short-listed only wind energy projects.

TAWF LLC is an Independent Power Producer (“IPP”) that responded to GRE’s Request for Proposals (“RFP”) for renewable energy supply resources. The Commission’s prerequisites to the issuance of a Certificate of Need are satisfied primarily based on the fact that TAWF LLC will sell the entire Project output to GRE. GRE determined that adding a significant wind resource to its renewable energy portfolio was necessary to achieve the Renewable Energy Objective contained in Minnesota Statutes Section 216B.1691. GRE selected TAWF LLC through a competitive bidding process to provide that resource because of the overall quality of TAWF LLC’s proposal in relation to the alternatives. TAWF LLC now seeks a Certificate of Need from the Commission in order to fulfill its obligations under the proposal it submitted in response to GRE’s RFP.

Minnesota Statutes Section 216B.1691 requires Minnesota utilities to make a “good faith effort” to have renewable energy sources make up ten percent of their energy portfolios by 2015. GRE issued its RFP for 100 MW of renewable energy through Split Rock Energy (“SRE”), which conducts



wholesale power marketing and trading for GRE.<sup>1</sup> Sixty-two bids were submitted from 25 developers. Fifty-six of the bids were wind energy projects, as were all of the bids selected for short-list consideration.<sup>2</sup> Only wind energy projects were short-listed. After analyzing renewable energy resource costs and availability, GRE determined that wind is the ideal resource to meet the greatest percentage of its renewable energy objectives at the lowest cost.<sup>3</sup>

TAWF LLC consists of more than 40 local farmer and landowner members currently owning land covering over eighteen square miles straddling the Martin-Jackson county line in southwestern Minnesota. TAWF's Project will consist of up to 67 1.5 MW turbines. The Project will be sited in the area surrounding GRE's Lakefield Junction Generating Station, a 550 MW peaking plant. As an IPP, TAWF LLC will be independent of the franchised electric utility serving the area in which the Project is to be located. TAWF LLC will not control the transmission facilities essential to customers who will purchase electricity produced by the Project. The Project is located within South Central Electric Association's service territory. South Central Electric Association is a member-owner of GRE and all of TAWF LLC's owners are members of South Central Electric Association.

TAWF LLC is well-capitalized and committed to providing the necessary financial support to develop and build the Project. Discussions relating to the Project have been ongoing and the Project has been in the planning stages for nearly a year. The more than 40 local landowners that comprise the ownership of TAWF LLC are motivated and willing to do all that is necessary to bring the Project to fruition. The Chief Manager, Secretary, and Treasurer positions have been selected and all relevant legal documents have been completed and filed. Initial funding for the Project has been generated through a cash infusion from the LLC membership. GRE's selection of TAWF LLC in its bidding process has created a unique rural relationship. Local landowners, most of whom will have Project turbines sited on their land, make up the membership of the TAWF LLC. These landowner-members have a controlling ownership interest in TAWF LLC and a continuing financial interest in the TAWF Project.

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<sup>1</sup> GREAT RIVER ENERGY INTEGRATED RESOURCE PLAN, *Resource Options: Renewables*, Section 6.2.4, at 11 (July 1, 2003) (attached hereto as Appendix A).

<sup>2</sup> *Id.*

<sup>3</sup> *Id.*

TAWF LLC's goals in creating and implementing the Project include providing a non-polluting, renewable source of energy that will meet a significant portion of GRE's energy needs. TAWF's Project will also diversify GRE's energy supply and minimize environmental impacts by utilizing existing transmission facilities. GRE selected TAWF LLC to help implement the first phase of its renewable energy objectives in order to gain experience operating a system containing a large amount of wind energy and to evaluate the results.<sup>4</sup> GRE's renewables resource plan "calls for additions of 100 MW [of wind energy] in 2005, 2007, 2010, 2012, and 2015" in order to meet the Renewable Energy Objective of a portfolio containing ten percent renewable energy.<sup>5</sup>

The purpose of the Project is to provide to GRE a cost-competitive renewable energy resource. Specifically, the Project's objectives are to:

1. Assist GRE in meeting the Renewable Energy Objectives by providing a nonpolluting renewable energy resource.
2. Meet a significant portion of GRE's demand for additional energy at lower cost.
3. Provide a facility that will enhance the diversity of GRE's electric supply system.
4. Minimize environmental impacts associated with transmission by utilizing existing facilities.

### **1.1.1 Project Contacts**

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<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

### 1.1.2 Filing Fees and Payment Schedule

The total fee for the Certificate of Need Application and the schedule for payment are shown on the adjacent table. The fee determination for the Project is based on a capacity of 100 MW, per the requirements of Minnesota Rules 7849.0210, subp.1. The payment schedule is based on Minnesota Rules 7849.0210, subp.2.

Fee Calculation	Amount
Fee Calculation Equation	\$10,000 + \$50/MW
Due with CON Application	3,750
Due 45 days after Application	3,750
Due 90 days after Application submittal date	3,750
Due 135 days after Application submittal date	3,750
Total Calculated Fee	\$15,000

## 1.2 Wind Power Development in Minnesota

Minnesota is a national leader in the development of wind-powered electrical generation. As of October 2003, Minnesota had 378.5 MW of installed wind capacity, with an additional 182 MW under construction.<sup>6</sup> The 2001 Minnesota State Legislature enacted the Minnesota Energy Security and Reliability Act, which established the Renewable Energy Objective that requires all utilities in Minnesota to make a good faith attempt to obtain at least one percent of their energy from renewable sources by 2005 and ten percent by 2015. The legislature has also established a requirement that all utilities provide customers with the option to select a renewable-based product for their energy needs. A previously issued wind power mandate solidified Minnesota's commitment to renewable energy resources in general and wind energy development in particular. Based on these legislative directives and a continuing demand for electrical energy no matter the source, interest in the development of wind power has resulted in rapid growth for the wind energy industry in Minnesota. Minnesota currently ranks among the top ten states in the nation in wind potential and in the top five in wind capacity.<sup>7</sup> TAWF LLC desires to be a major contributor to the development of renewable energy sources in Southern Minnesota. All power produced by the Project will constitute renewable source energy in compliance with Minnesota Statutes Sections 216B.169, 216B.1691, 216B.2422, and 216B.2423.

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<sup>6</sup> American Wind Energy Association, *Wind Project Database*, <http://www.awea.org/projects/minnesota.html>. November 3, 2003.

<sup>7</sup> Stephanie Adams, Minnesota Workforce Center System, *Minnesota Economic Trends: Why is Everyone Talking About Wind Power in Minnesota* (December 2001/January 2002), at <http://www.mnwfc.org/lmi/dec01/wind.htm> (last visited November 8, 2003).

TAWF LLC believes that it has selected an ideal site for the development of its Project. Dedicated landowner members of TAWF LLC produced a comprehensive plan and a competitive bid resulting in the selection of TAWF LLC as the producer of 100 MW of wind-generated electrical energy for GRE. The entire output of the TAWF Project will be sold to GRE through a Power Purchase Agreement. Using the latest in wind energy technology to harness the average wind speeds of 7.5 m/s at the Project site, TAWF LLC's proposed facility will add significantly to the renewable energy in the State as well as in GRE's portfolio.

### **1.3 Environmental Analysis**

TAWF LLC includes in this Application a detailed description and analysis of the land use plan and environmental setting and effects associated with the Project. In order for the environmental effects of the Project to be assessed, the Application includes a discussion of the construction, operating, and maintenance practices that will be used by TAWF LLC in the development and operation of the Project. TAWF LLC submits that environmental impacts associated with the construction and operation of the Project can be minimized using best management practices. TAWF LLC believes that its unique organizational structure will serve to ensure that negative environmental effects on the Project site will be minimal. Because the owners of TAWF LLC also own all of the land on which the Project's turbines will sit, TAWF LLC is positioned to be uniquely sensitive to the environmental impacts associated with the Project. An initial fatal flaw analysis conducted on the Project site, involving an examination of Project land use, Project site historical and archaeological concerns, and Project site wildlife and vegetation, revealed no land use or environmental impacts that would prevent the Project from being implemented.

The Application also includes a brief discussion of the impacts of a biomass and landfill gas alternative to the Project. Because the RFP requested only renewable energy proposals and only wind energy facilities merited serious consideration, no discussion of nuclear or fossil-fueled facilities or additional high voltage transmission line alternatives is contained in this Application.

## **2.0 Need Summary**

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### **2.1 Certificate of Need Criteria**

Minnesota Rule 7849.0120 (2001) outlines the criteria under which the Commission will analyze the Project in deciding whether to grant a Certificate of Need. The statute requires the Commission to determine whether the proposed facility is necessary given the availability of other alternatives. Because TAWF LLC is not an established and vertically-integrated utility seeking to build a new facility, TAWF LLC respectfully asserts that many of the rule's criteria are inapplicable. TAWF LLC was developed for the single purpose of responding to GRE's request for proposals of up to 100 MW of renewable energy. Because GRE only considered renewable energy projects in its RFP, and because only wind energy projects were short-listed, the primary focus of this Application is the TAWF Project's superiority to other renewable energy source alternatives. In general terms, the criteria require a decision by the Commission on the following four issues: (1) whether harm will result if the Application is denied; (2) whether there is a better alternative to the proposed facility; (3) whether the proposed facility will benefit society; and (4) whether the proposed facility is consistent with governmental energy policies.

### **2.2 The TAWF Project Plan Satisfies the Four-Part Need Test**

The need for this Project is satisfied based on the fact that TAWF LLC won a competitive bidding process to sell the Project output to GRE. The Project is being built to satisfy GRE's renewable energy needs and the first phase of its plan to achieve the Renewable Energy Objective. TAWF LLC's selection through that competitive bidding process ensures its cost-effectiveness relative to alternative sources of energy. TAWF LLC further submits that, based on its Project plan and this Application, all of the criteria for approval of a Certificate of Need are satisfied.

#### **2.2.1 The Probable Result of Denial of TAWF LLC's Application Would Be an Adverse Effect on the Adequacy, Reliability, and Efficiency of the Regional Energy Supply and on GRE's Ability to Meet the Renewable Energy Objective**

The TAWF Project has been designed from its inception to respond to GRE's desire to meet the Renewable Energy Objective and to obtain low-cost energy supplies. TAWF LLC was selected by GRE because of the Project's ability to provide GRE with an efficient, cost-effective means of

meeting those goals. The consequences of a denial of this Application would be a significant impairment of GRE's ability to meet the Renewable Energy Objective.

TAWF LLC is currently negotiating a power purchase agreement whereby all of the Project energy will be sold to GRE. As the second largest power supplier in Minnesota and the fourth largest cooperative power supplier in the nation, GRE provides power and energy to 28 electric distribution cooperatives in Minnesota and Wisconsin. Their combined service territory stretches from the farming communities in southern Minnesota through the lake country to the logging industry in the state's northeastern region. GRE provides power and energy to many of the outer-ring suburbs surrounding the Twin Cities, an area that consistently has been one of the nation's leaders in job growth and energy usage. The demand for electricity in GRE's regional service territory is growing while supplies remain limited and future deficits loom. TAWF LLC submits that the Project will serve to assist in meeting GRE's projected future needs and diminish the expected future deficits in resources. Additionally, the TAWF Project will serve to help GRE meet the Renewable Energy Objective and provide a clean, low-cost source for the region's and the state's renewable energy needs.

The Mid-Continent Area Power Pool ("MAPP") and the Minnesota Department of Commerce ("MDOC") have, in recent years, consistently reinforced the regional need for increased generating capacity in the coming decade (discussed in more detail in Section 7.0 of this Application). Cost fluctuations and reliability problems serve to reinforce the need for sufficient capacity, low-cost energy, and diverse generation sources. Independent Power Producers such as TAWF LLC are widely recognized as essential to meeting regional energy needs, stabilizing energy costs, and enhancing energy reliability. The TAWF Project offers GRE, Minnesota, and the MAPP region the opportunity to ensure adequate capacity exists, stabilize and perhaps even lower, wholesale power prices, and provide added reliability through a clean, cost-effective renewable energy generation facility.

GRE's renewable resource plan states that "[w]ind energy is currently the most cost-effective renewable energy resource in Minnesota."<sup>8</sup> GRE consistently spends considerable time and resources ensuring that its forecasting methods are rigorous and reliable. GRE takes seriously its obligation to meet its members' demand and energy needs and strives to incorporate the best statistical methods as

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<sup>8</sup> GREAT RIVER ENERGY INTEGRATED RESOURCE PLAN, *Resource Options: Renewables*, Section 6.2.4, at 10 (July 1, 2003).

well as its considerable institutional knowledge of the system to create the best possible forecasts. As a result of its most recent forecast demonstrating a need for energy in the near-term, and its commitment to making a good faith effort to meet the Renewable Energy Objective, GRE selected TAWF LLC to supply wind energy to help satisfy its forecasted needs and renewable energy objectives.

Denial of this Application would adversely affect GRE's ability to meet its energy requirements in the most cost-effective manner and would significantly hinder GRE's ability to meet the Renewable Energy Objective. Because the Project offers Minnesota and the MAPP region a clean, low-cost, and efficient renewable energy source, denial of this Application would also preclude Minnesota from meeting its energy needs and maintaining its position as a national leader in promoting and supporting environmentally-sound renewable energy policy.

### **2.2.2 No More Reasonable and Prudent Alternative to the TAWF Project has Been Demonstrated**

The only alternatives to the TAWF Project considered by GRE were those that could meet GRE's plan to fulfill the Renewable Energy Objective. Through its RFP, GRE determined that no other renewable alternative provided a more cost-effective and efficient solution to its needs.

GRE determined that wind energy was currently the most cost-effective renewable energy resource in Minnesota.<sup>9</sup> Wind energy sources also offer the ability to generate large amounts of energy with little to no negative effects on the environment. The TAWF Project's location is optimal for utilizing existing transmission infrastructure, thereby minimizing environmental impact. The Project has been designed to connect to Xcel's Martin County Substation, the same substation that GRE's Lakefield Junction Generating Station uses, which is an efficient and highly cost-effective means of interconnection. The Project's proximity to and ability to interconnect with existing transmission infrastructure was a primary factor in GRE's favorable decision on TAWF LLC's RFP response. The opportunity for the Project to use existing firm transmission service with GRE's existing 550 MW Combustion Turbine Peaking Plant helped make TAWF LLC's proposal the ideal response to GRE's RFP.

Joint use of transmission facilities is not the only reason why the TAWF Project and GRE's existing peaking plant are an ideal match. Adding 100 MW of wind energy that will use the same

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<sup>9</sup> *Id.*

transmission facilities as the peaking plant allows GRE the flexibility to manage both energy costs and transmission demand. GRE has 550 MW of firm peaking capacity that is only operated approximately five percent of the year. Demand on the peaking plant and the associated transmission facilities is at its height in the summer months. The Project will produce more energy in the late fall, winter, and early spring. Because wind resources are the most scarce in the summer months and plentiful during the times when the peaking plant is not an essential GRE resource, an optimal transmission arrangement is achieved. Since GRE has the choice of which facility to use at any given time, neither facility places excess demand on the transmission system at any one time.

There is no underlying fuel risk associated with energy from the Project. The Project's fuel source is essentially free (after obtaining easements for wind rights), which eliminates any fuel cost uncertainty over the life of the facility. Thus, the overall price of energy generated by the Project will be more stable over time than energy generated from fossil-fueled plants. The Project's unique business model also maximizes cost-effectiveness. By allowing area landowners who will have turbines on their land, as well as their neighbors, to buy shares of the LLC, many of the expensive, time-consuming, and traditionally difficult aspects of a typical wind farm's development have been eliminated (e.g., gaining control of the land, complaints from neighboring residents and landowners during both the permitting phase and during operation, and planning for expansion to meet future needs).

Alternatives to the Project were rejected primarily based on price. Biomass facility alternatives offered prices ranging from \$44.75-\$53.60/MWh. TAWF LLC will provide the Project output to GRE at a significantly lower price.

The timing of implementing a large wind energy facility also made the TAWF Project the most desirable alternative. The availability of the Federal Production Tax Credit ("FPTC") and depreciation benefits for wind energy allows TAWF LLC to sell the Project output at a price significantly lower than non-wind alternatives. The FPTC gives corporate entities investing in large-scale renewable energy projects a 1.8 cent per kWh tax credit.

While reliability is often cited as a key criticism of wind energy facilities, TAWF LLC submits that this criticism is misguided, based on the specific nature of the TAWF Project and the role that it will play in GRE's energy portfolio. Technological advances in turbine design and a better understanding of wind resources have produced major improvements in wind energy reliability. The concept of reliability should not be confused with the inherent intermittent nature of wind resources.



Availability is the “commonly used operational measure of reliability.”<sup>10</sup> The TAWF Project’s turbines will be available to provide energy to GRE 95 percent of the year. While it is true that the intermittent nature of wind resources typically requires other generating sources, GRE already has a peaking plant installed that uses the same transmission facilities as will the TAWF Project. This underscores the symmetry and compatibility of pairing the Project with GRE’s existing gas-fired, combustion turbine peaking facility.

The TAWF Project will use the most modern wind energy generating technology available. Current plans are to use 1.5 MW GE wind turbines, which are designed to operate at wind speeds between 3 and 25 m/s. The average 7.5 m/s wind speeds at the Project site provide an optimal match of energy resource to equipment technology. This enables the Project to deliver energy at a very competitive price.

The Project will result in the disturbance of only approximately 40 acres of cultivated land. These areas will be permanently removed from production and replaced by access roads, wind turbines, transformers, an operations and maintenance building, and a Project substation. Revenue generated from the Project is anticipated to exceed the expected revenue from the disturbed acreage and will add a measure of stability to often unpredictable farming revenue.

Safety is a primary concern and the Project will be designed to ensure maximum safety. Wind turbines will generally be set back a minimum of 250 feet from all roadways and a minimum of 500 feet from inhabited residences. This also serves to minimize the danger of ice throws and reduces noise and shadow flicker. TAWF LLC also plans to develop public education materials regarding public safety issues related to the wind energy industry.

The Project will emit no air pollutants. Unlike fossil-fueled power plants, no greenhouse gases will be emitted by the Project.

The Project will consume minimal surface or groundwater and will not discharge wastewater containing any heat or chemicals during operation. The Project will produce energy without the extraction, processing, transportation, or combustion of any amount of fossil fuels.

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<sup>10</sup> NATIONAL WIND COORDINATING COMMITTEE, *Wind Energy Issue Brief No. 10: Wind Performance Characteristics* (January 1997), at <http://www.nationalwind.org/pubs/wes/ibrief10.htm> (last visited November 8, 2003).

GRE issued its Renewables RFP, in part, because of the environmental factors just listed. When these factors are considered in conjunction with TAWF LLC's ownership structure and proximity to GRE's existing peaking plant and transmission facilities, no other alternative was a more prudent or reasonable choice. TAWF LLC was selected because it offered GRE the most cost-effective, efficient, and environmentally-sound option to assist GRE in meeting the Renewable Energy Objective. In addition, GRE was attracted to TAWF LLC's innovative ownership structure, which features substantial participation by farmers who are members of one of GRE's member distribution cooperatives.

### **2.2.3 The TAWF Project Will Benefit Society in a Manner Compatible with the Natural and Socioeconomic Environments**

The Project will provide significant benefits to local communities in Martin and Jackson Counties. The Project's locally-owned, locally-managed structure translates into local residents receiving economic benefits while at the same time providing added value to the Project. Decisions made in relation to the Project will be made locally by the people who will be affected by those decisions. The TAWF Project will also provide significant income opportunities to its local landowner-member owners, area residents, and state and local government entities, while also providing a large supply of low-cost renewable energy with minimal impact on the environment.

Investment in wind energy development creates jobs, income, and tax revenue, which is of particular interest in rural areas. The Project will create significant short-term employment opportunities during construction, as well as long-term operational jobs. An estimated 50 to 100 construction jobs will be created over the 8-month construction period. Three to five permanent FTE positions are expected to be created when the Project begins operation. The development of wind energy in southwestern Minnesota has been important in diversifying and strengthening the area's economic base. TAWF LLC believes that when the Project's minimal negative environmental impacts are considered in light of the fact that it will help GRE achieve the Renewable Energy Objective and provide economic stimulus to the local area, the Project's societal benefits are evident.

### **2.2.4 The TAWF Project is Consistent with Federal, State, and Local Rules and Policies**

One key Project objective is to provide a significant amount of efficient renewable energy. The state of Minnesota has begun to form policy that establishes goals for renewable energy use in the state. The Minnesota Renewable Energy Objective requires utilities to make a good faith effort to produce

at least one percent of their energy from renewable energy sources by 2005, and increase that each year by one percent until 2015.<sup>11</sup>

The Minnesota legislature has found that:

The following energy sources for generating electric power distributed in the state listed in their descending order of preference, based on minimizing long-term negative environmental, social and economic burdens imposed by the specific energy sources are:

1. *Wind* and solar.
2. Biomass and low-head or refurbished hydropower.
3. Decomposition gases produced by solid waste management facilities, natural gas fired cogeneration, and waste materials or by-products combined with natural gas.
4. Natural gas, hydropower that is not low-head or refurbished hydropower, and solid waste as a direct fuel or refuse-derived fuel.
5. Coal and nuclear power. . .

For the purposes of paragraph (c) within each clause, the more *efficient* an energy source is in generating electricity or the more efficient a technology is that utilizes an energy source, the more preferred it is for use in generating electricity for distribution and consumption in the state.<sup>12</sup>

The Project is consistent with the stated legislative preference for wind as an efficient energy source. The Project also minimizes “negative environmental, social and economic burdens imposed by the specific energy sources” when compared to fossil-fueled alternatives.<sup>13</sup>

Minnesota’s legislature has previously passed two mandates, Minn. Stat. Sec. 116C.771b (1994) and Minn. Stat. Sec. 216B.2423, subd.1 (1994), requiring any Minnesota utilities operating a nuclear-powered electric generating plant within the State to install or purchase up to 825 MW of wind-powered capacity over the last eight years. The state legislature has also shown a preference for

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<sup>11</sup> Minn. Stat. § 216B.1691, subd. 2 (2002).

<sup>12</sup> *Id.* § 216C.051, subd. 7 (emphasis added).

<sup>13</sup> *Id.*

wind over other renewable alternatives by allocating eighty percent of renewable energy source capacity in legislative mandates specifically for wind power.

Further support for the premise that the Project is consistent with state energy policy can be found in the favorable tax treatment that wind energy facilities receive. The state legislature has exempted all real and personal property of wind energy conversion systems from paying property taxes.<sup>14</sup> Wind energy conversion systems are also exempt from the state's sales tax.<sup>15</sup> Materials used to manufacture, install, construct, repair, or replace wind systems are also exempt from state sales tax.<sup>16</sup>

The Project's utilization of existing high voltage transmission lines is consistent with the State's commitment to non-proliferation of transmission corridors. This policy resulted from a lawsuit brought in the 1970s under the Environmental Rights Act related to the siting of a new high voltage transmission line.<sup>17</sup>

The TAWF Project also conforms to federal energy policy. The federal government has spent a significant amount of money in the last 20 years to develop renewable energy resources. One such direct method is the Production Tax Credit ("PTC"), which offers wind developers tax credits of 1.8¢/kWh for wind production. The PTC currently expires at the end of 2003. In the current energy bill, the PTC would be extended until 2006. The PTC demonstrates a significant commitment on the part of the federal government to establish more renewable energy production capacity.

A Renewable Portfolio Standard ("RPS") has been generally included in proposed federal legislation. The passage of the RPS would require that an additional one percent of the nation's electricity come from renewable energy sources by 2005 and increase yearly until renewable energy provided ten percent of the national electricity supply by 2020. Similar RPS laws have already been passed in several states. In order to meet the one percent requirement by 2005, substantial additional renewable energy capacity will need to be brought online in Minnesota. The Federal Energy

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<sup>14</sup> Minn. Stat. § 272.02, subd. 22 (2002). The state taxes wind farms based on energy production, with individual wind facilities given the ability to negotiate with county boards to pay a flat fee in lieu of the energy production tax. *Id.* § 272.029. The land on which the property is located remains taxable.

<sup>15</sup> *Id.* § 297A.68, subd. 12.

<sup>16</sup> *Id.*

<sup>17</sup> *People for Environmental Enlightenment and Responsibility (PEER) v. Minnesota Environmental Quality Council*, 266 N.W. 2d 858 (Minn. 1978).

Regulatory Commission (“FERC”) has also been developing national policies that will encourage the development of renewable energy sources such as wind.

In the 1992 Energy Policy Act, Congress created the classification “Exempt Wholesale Generators.” The Act’s legislative history notes that its electricity provisions “will promote additional competition in [the] wholesale electricity power market in order to improve the efficiency of the electric industry and secure the lowest possible costs for consumers”.<sup>18</sup> The Act vested the FERC with the jurisdiction to determine, after an application process, whether an entity would be an Exempt Wholesale Generator (“EWG”). In the Act, Congress reserved for the states the authority to regulate “environmental protection or the siting of facilities” that might qualify as Exempt Wholesale Generators. (15 U.S.C. Statute 79 note.)

The Project will also meet or exceed the requirements of all federal and state and local environmental laws and regulations. Table 3 provides a list of approvals the Project must obtain from governmental entities in support of full compliance. TAWF LLC has committed to obtaining all necessary environmental approvals required under state law. The Project will also meet all local requirements for permits and approvals.

TAWF LLC’s commitment to its mission of providing a large amount of renewable energy in a cost-effective and environmentally-friendly manner solidifies the Project’s consistency with federal, state, and local energy policies.

## **2.3 Project Relationship to Socioeconomic Considerations**

### **2.3.1 Socially Beneficial Uses of Energy Output**

Energy produced by the TAWF Project will provide significant, numerous, and varied societal benefits. Providing a large amount of renewable energy with minimal environmental impact is just the beginning. Representatives from GRE have said that the energy generated from the TAWF Project will be sufficient to “meet the average energy needs for 29,000 households.”<sup>19</sup> Overall national security and energy reliability can both be enhanced through the development of diversified generation resources such as wind.

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<sup>18</sup> H.R. Rep. No. 102-474(1), 102nd Cong., 2nd Sess. (1992), *reprinted in* 1992 U.S.C.C.A.N. 1953, 1961.

<sup>19</sup> Jennifer Brookens, *Trimont area selected for wind farm*, FAIRMONT SENTINEL (Sept. 24, 2003).

TAWF LLC's landowner-member ownership structure also allows it to take advantage of another social benefit of wind energy: providing a supplementary source of income for rural landowners and farmers. The percentage of Minnesota farmers whose principal occupation and source of income is farming has decreased significantly over the past fifteen years.<sup>20</sup> Large-scale wind energy operations usually lease wind rights from farmers that own the land on which the turbines sit, paying them \$2,000 to \$5,000 per turbine each year.<sup>21</sup> Because the member-owners of TAWF LLC also own the land on which the turbines will sit, that money stays with TAWF LLC, making it more cost-effective while still providing the farmer and landowner members of the LLC a significant supplementary source of income. Additionally, because only a portion of the land is used for turbine siting, access roads, and transformers, farming operations can continue largely undisturbed. To illustrate this, consider that the TAWF Project will be sited over an area spanning 11,520 acres of land, while only 40 acres will be permanently removed from agricultural use over the life of the Project.

### **2.3.2 Promotional Activities Giving Rise to Demand**

TAWF LLC has not engaged in promotional practices designed to encourage increased electricity consumption among retail customers.

### **2.3.3 Effects of Facility in Inducing Future Development**

TAWF LLC does not anticipate that its Project will have a significant impact on future development in the Project region beyond the economic benefits associated with its facility and any potential expansions. As an IPP, the TAWF Project is likely to have less of an effect on regional development than would a public utility which builds a similar project to meet a specific regional need. The availability of power is a prerequisite to development in general, but TAWF LLC does not believe that the Project is tied to any development of a particular use, zoning category, or location.

This is not to say, however, that additional wind energy infrastructure in the Project area will not provide significant benefits to the local economy and local landowners. Landowners in the project area have already benefited from the participatory opportunities that the TAWF LLC ownership structure has afforded them. Additional wind energy infrastructure will also increase the local property tax base in the counties and municipalities in which the Project is sited. The Lake Benton I

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<sup>20</sup> Stephanie Adams, Minnesota Workforce Center System, *Minnesota Economic Trends: Why is Everyone Talking About Wind Power in Minnesota* (December 2001/January 2002), at <http://www.mnwfc.org/lmi/dec01/wind.htm> (last visited November 8 2003).

<sup>21</sup> *Id.*

and Lake Benton II wind energy facilities on Buffalo Ridge have provided Lincoln and Pipestone Counties with a significant infusion of tax revenue. In 2000, the two counties received over \$1.2 million in tax revenue from the Lake Benton facilities, or over 20 percent of the combined yearly revenue for those counties.<sup>22</sup> As previously noted, approval and development of the Project will also promote the development of additional renewable energy resources in accordance with state demand and environmental policy.

The TAWF Project will also provide significant income opportunities for local residents not affiliated with project ownership. A recent study commissioned by the Renewable Energy Policy Project concluded that the construction and operation of wind power facilities aids states in their economic development efforts.<sup>23</sup> According to the study, 3.7 jobs are created per megawatt of wind power developed in the United States.<sup>24</sup> In addition to construction, operation, and maintenance positions, these jobs include opportunities in marketing, sales, research, and administration. The TAWF Project will generate over 100 construction jobs alone. This is in addition to the consulting, management, and environmental work already created by the Project.

At the same time the Project is providing income to local residents, it will also help contribute to making the energy those residents buy less expensive. The development of wind energy technology now makes wind power's relative price competitive with new natural gas and coal generation.<sup>25</sup> The development of wind energy in Minnesota reduces dependence on turbulent fossil fuel markets and helps keep energy dollars local.<sup>26</sup>

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<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

## 3.0 Description of Project and Alternatives

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The Project will benefit from recent dramatic improvements in turbine technology. Selection of equipment will be made based on an analysis of cost, efficiency, and reliability. Current plans are to use sixty-seven 1.5 MW wind turbines with a maximum electric generating capacity of approximately 100 megawatts. The Project's entire output will be sold to GRE. The Project will be constructed and brought into commercial operation as early as the fourth quarter of 2004 but no later than December 31, 2005.

Figure 1 is the Project location map, while Figure 2 is the Project vicinity map. TAWF LLC proposes to locate the Project at a rural site in Jackson and Martin Counties in an area that features a wind resource in the high Class 3 to low Class 4 range.<sup>27</sup> Advances in turbine technology have made development of Class 3 wind areas economically viable. The Project area is adjacent to Xcel's Martin County Substation, which will provide interconnection to the transmission grid.

GRE's RFP sought only renewable energy project responses. In addition to several wind energy conversion system proposals, GRE received responses for a biomass facility and a landfill gas facility. A more detailed description of those alternatives and their environmental effects is included in Section 3.2. GRE determined that wind energy provided the most cost-effective, environmentally-friendly, and efficient method of meeting the criteria in its RFP and its overall renewable energy objectives. Cost was the primary factor that eliminated the biomass and landfill gas facilities. The TAWF Project was selected over the other wind proposals based on cost, location, proximity and ability to interconnect with existing transmission facilities, the quality of its proposal, the strength of its management team and ownership structure, and the fact that it best satisfied the RFP criteria.

### 3.1 TAWF Facilities Description

The Project's wind turbines operate upwind, with the blades facing into the wind. Exact turbine models are subject to change, but the project currently plans to use GE turbines. Based on currently available technology, the turbines are expected to have an 80 meter (262 ft.) hub height and a rotor diameter of either 70.5 or 77 meters (231- or 253-feet). Each tower will be secured by a concrete foundation that can vary in design depending on the soil conditions. A control panel inside the base

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<sup>27</sup> The National Renewable Energy Laboratory, in cooperation with state energy agencies, has ranked national wind resources from Class 1 to Class 7. Classes 3 and above are considered suitable for utility scale development.



of each turbine tower houses communication and electronic circuitry. Each wind turbine will be accessible via all-weather Class 5 gravel roads providing access to the turbines via public roads.

A step-up transformer will be installed at each turbine to raise the voltage to 34.5 kV. Both power and communication cables will be buried in trenches adjacent to the Project access roads on private property. At the point where the access and public roads meet, the communication and powerlines will either rise from underground to overhead lines or continue as underground feeder lines to the Project substation.

An operations and maintenance facility will likely be constructed within the Project area.

### **Wind Turbine Components**

Each wind turbine site will consist of a nacelle and blade mounted on a tubular steel tower situated on a concrete pad foundation. The horizontal-axis wind turbines that will be employed at the Project will consist of three main parts: the tower; the rotor, which encompasses both blades and the hub; and a box behind the blades called the *nacelle*, which houses the mechanical and electrical equipment. Figure 3 illustrates the turbine assembly.

Electromechanical controls orient the turbines' blades to the wind. As the wind passes over the blades, it creates lift and causes the rotor to turn. The rotor is connected through a low-speed shaft to a transmission, which is connected to dual-wound generators that produce AC electricity.

Each turbine is equipped with a wind speed and direction sensor that communicates to the turbine's control system to signal when sufficient winds are present for operation. The GE 1.5 MW wind turbine features variable-speed control and independent blade pitch to assure aerodynamic efficiency. The 1.5 MW turbine begins operation in wind speeds of 3 m/s (6.7 mph) and reaches its rated capacity (1.5 MW) at a wind speed of 12 m/s (26.8 mph). The turbine is designed to operate in wind speeds of up to 25 m/s (45 mph) and can withstand sustained wind speeds of over 45 m/s (100 mph).

## **Tower and Foundation**

The turbine sits atop a conical tubular steel tower. The tower contains a safety ladder to provide access to the nacelle. The tower will be constructed on a concrete foundation. Precise foundation size will be determined during final design, but is expected to be approximately 46 feet in diameter and 8 feet deep.

## **Electrical Collector System**

The project electrical system is illustrated schematically in Figure 4. Wind turbine generator output is at 575 volts, which feeds down through the tower to a step-up transformer at the base of each tower where the voltage is increased to 34.5 kV. An underground system of electrical feeder lines will collect the power and deliver it to the point of interconnection. The electrical lines will be buried in trenches adjacent to the Project access roads. At the point where the access and public roads meet, the feederlines will either rise from underground to overhead lines or continue as underground lines.

## **Transmission Interconnection**

The feeder system will deliver the Project energy to the Project substation located adjacent to Xcel Energy's Martin County Substation, which is located at GRE's Lakefield Junction Generating Station. At the Project substation, the voltage will be stepped up to 345 kV and connected to the transmission grid at the Martin County Substation. Because the Project will connect directly to the Martin County Substation, no Certificate of Need or Site Permit for a High Voltage Transmission Line will be required.

### **3.1.1 Nominal Generating Capability and Effect of Economies of Scale**

Each turbine will have a net nominal rating of 1.5 MW. The Project's nominal generating capability is approximately 100 MW. Larger wind projects can realize economies of scale by spreading out the relatively fixed transaction, operation, and maintenance costs over the project, resulting in decreased costs per kWh of electricity produced. The American Wind Energy Association illustrated these economies of scale by comparing a 3-MW with a 51-MW project. Assuming that both projects use the same turbines and are located in an area with an average wind speed of 18 mph, the cost of the

electricity from the 3-MW project was \$0.059 per kWh while the cost from the 51-MW project was \$0.036 per kWh, a difference of nearly 40%.<sup>28</sup>

### **3.1.2 Anticipated Operating Cycle / Annual Capacity Factor**

A capacity factor of approximately 39 percent is anticipated for the Project.

### **3.1.3 Fuel Use**

The wind turbines will be powered by the wind.

### **3.1.4 Anticipated Heat Rate**

Heat rejection and heat rate are not applicable to a wind turbine project.

### **3.1.5 Facility Location**

The Project will be located in Jackson and Martin Counties in Minnesota near Trimont, which is six miles east of the Project site. The Project is southeast of the town of Windom and north of Jackson, as shown in Figure 2.

The turbines will be placed throughout an area comprising about 11,520 acres in Kimball and Cedar townships, as shown in Figure 1. The area is entirely rural with an agricultural-based economy. Each turbine will take up approximately one-half an acre, including foundation and access roads, of land out of agricultural production. Approximately 40 acres of land will be taken out of agricultural production for the entire project.

The Project area is located near existing generation and transmission facilities. The Project is to be sited in the area surrounding GRE's Lakefield Junction Generating Station, a 550 MW peaking plant. The Project will be connected to the electrical grid at Xcel's Martin County Substation, located within the Project area. The Project is also located within South Central Electric Association's service territory. South Central Electric Association is a member-owner of GRE. The nearest municipality is Trimont, which is six miles east of the Project site. Only 21 homes are presently inhabited within the Project boundaries, so residential interference will be minimal. The Project land is almost entirely agricultural, primarily used for row crops, hogs, and other livestock. Lakefield Junction Generating Station and one tavern are the only notable non-agricultural structures within the

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<sup>28</sup> AMERICAN WIND ENERGY ASSOCIATION, *The Economics of Wind Energy*, (March, 2002), at <http://www.awea.org/pubs/factsheets/EconomicsofWind-March2002.pdf>. (last visited November 14, 2003).

Project boundaries. The Project site and TAWF LLC's landowner-member ownership structure offers the ability for expansion as necessary.

## **3.2 Availability of Alternatives**

GRE's RFP requested only renewable energy sources as defined by Minnesota Statutes Section 216B.1691, subd. 1. That definition includes solar, wind, hydroelectric with a capacity of less than 60 MW, and biomass. GRE's RFP defined biomass as energy generated from the combustion of biomass, the capture of landfill methane, or from anaerobic digesters. GRE short-listed only wind energy providers. Because only renewable energy sources were requested in GRE's RFP and only wind energy providers were considered as alternatives that met GRE's RFP criteria, TAWF LLC believes that a detailed discussion of non-renewable alternatives is not applicable for this Certificate of Need Application.

### **3.2.1 Purchased Power**

A major factor in GRE adding significant wind energy to its portfolio and choosing TAWF LLC to provide that energy was the cost savings that that option provided over purchasing power on the open market. GRE currently purchases power year round at a price averaging approximately \$36/MWh. In 2005, GRE projects that it will need to purchase 1,123 GWh of energy on the short-term or spot market, at an average cost of \$37.62/MWh. TAWF LLC will provide GRE with energy at a price lower than prices available on the market.

Short-term capacity options are continuously being evaluated and purchased by GRE as transmission and generation resources become available. GRE projections have indicated, however, that there are inadequate amounts of available energy from other regional utilities through 2004. Furthermore, growing transmission constraints make it more likely that schedules to import energy from outside the region will be cut. The TAWF Project will enable GRE to fill this gap at a price lower than it could achieve by purchasing power on the market.

### **3.2.2 Increased Efficiency of Existing Facilities**

TAWF LLC, as a newly-formed IPP, has no existing generating facilities or transmission lines.

### **3.2.3 New Transmission Lines**

New transmission lines are not a viable alternative to the TAWF Project. TAWF LLC was designed to assist GRE in meeting its renewable energy objectives. Building new transmission lines do not correspond with that goal. In fact, TAWF LLC was selected in part because no new transmission

lines would be required because of the TAWF Project's proximity to existing transmission facilities. The Project's utilization of existing high voltage transmission lines is consistent with the State's commitment to non-proliferation of transmission corridors.

#### **3.2.4 New Generating Facilities of a Different Size or Using a Different Energy Source**

None of the facilities listed in Minnesota Rules 7849.0250(B) are responsive to GRE's need to fulfill its renewable energy objectives. Additionally, the construction of a new nuclear-powered facility is not allowed by law.<sup>29</sup>

#### **3.2.5 Renewable Alternatives**

Other alternatives available and evaluated by GRE in its most recent Integrated Resource Plan ("IRP") include renewable biomass energy resources such as wood burning, animal waste, whole tree burning, ethanol-fired combustion turbines, mixed municipal solid waste, hydroelectric power, photovoltaic power, and landfill gas. GRE considered biomass and landfill gas alternatives in its RFP and concluded that neither were as cost-effective as wind energy.

### **3.3 Discussion of Proposed Facility and Alternatives**

According to GRE's IRP, wind energy is currently the most cost-effective renewable energy resource in Minnesota. All proposals considered by GRE on its short-list of responses to its RFP were proposed wind generation projects. GRE has indicated to TAWF LLC that it was selected from the short-list of wind energy providers because of factors including price, the Project's proximity to and ability to interconnect with existing transmission facilities, the quality of its proposal in relation to GRE's requirements, the Project's location and ownership structure, and the strength of its management team.

#### **3.3.1 Capacity Cost in Dollars per Kilowatt**

Wind energy projects do not have a cost attributable to capacity and thus costs for wind energy facilities are typically not expressed in terms of capacity costs.

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<sup>29</sup> Minn. Stat. § 216B.243, subd. 3(b) (2002).

### **3.3.2 Service Life**

A service life of 30 years is assumed for the comparison of the Project to other alternatives. With proper scheduled maintenance, the Project is expected to have a service life of approximately thirty years. TAWF LLC believes that its maintenance regimen and responsiveness to landowners and neighbors engendered by the Project's local ownership will help result in unit longevity. With the maintenance program incorporated into the Project, including proper maintenance, service, and replacement of parts, the expected life of the wind turbines to be used will be approximately 30 years. The site has been designed to allow for upgrades after 30 years to replace aging turbines with new models.

### **3.3.3 Estimated Average Annual Availability**

TAWF LLC has estimated that its wind energy conversion system will be available 95 percent of the year, which is consistent with current industry standards.

### **3.3.4 Fuel Costs**

Wind resources provide nearly all the necessary power to generate Project energy. Obtaining easements for the wind rights on the land where the turbines are located makes up the only true "fuel cost" of wind energy. Nominal purchases of electricity will be necessary with TAWF LLC ultimately selling the Project's net output.

### **3.3.5 Variable Operating and Maintenance Costs**

Maintenance costs for large-scale wind energy operations typically are less than \$0.01/kilowatt-hour.<sup>30</sup> An additional benefit of wind energy facilities is that they typically do not require going "off-line" for maintenance. Individual turbines can be serviced while the rest of the facility continues to deliver energy.

### **3.3.6 Total Cost**

TAWF LLC has estimated costs using typical wind farm design, construction, and operation data to be approximately \$1200/kW, pending final interconnection costs. For purposes of comparison, a service life of 30 years has been assumed in order to estimate annualized capital costs.

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<sup>30</sup> Stephanie Adams, Minnesota Workforce Center System, *Minnesota Economic Trends: Why is Everyone Talking About Wind Power in Minnesota* (December 2001/January 2002), at <http://www.mnwfc.org/lmi/dec01/wind.htm> (last visited November 8, 2003).

The actual price that TAWF LLC will obtain from the sale of its energy and environmental attributes to GRE is proprietary and confidential.

### **3.3.7 Estimate of Facility's or Alternative's Effect on Rates**

The TAWF Project was chosen as the result of GRE's competitive bidding process. It was selected in part because it was one of the lowest-cost renewable resources of the alternatives GRE considered. GRE makes purchases of power on the open market year-round at a cost that is significantly higher than that offered by TAWF LLC. The energy that TAWF will produce will replace the more expensive purchased power, with a corresponding rate effect. As a result of adding an additional low-cost energy resource to its portfolio, GRE's rates will be lower than they otherwise would have been.

### **3.3.8 Efficiency**

Because no fuel is burned in the production of energy at the TAWF facility, TAWF LLC submits that this information requirement is inapplicable.

## **3.4 Facility Information (for alternatives involving construction of a LEGF)**

### **3.4.1 Land Requirements**

The TAWF Project is located on land that is zoned for agricultural use. The Project will remove approximately 40 acres from agricultural use. No relocation of people or businesses will be necessary for the Project.

It is expected that the land requirements for the TAWF Project are consistent with the requirements for alternative projects of a similar size. Typical wind farms will take approximately one-half acre per turbine out of production.

The land requirements for electric power plants fueled by biomass depend upon the characteristics of the individual facility such as the size of the fuel storage and processing area, the amount of water required for the process, and the type of combustors and associated equipment and storage for solid waste. Recently permitted biomass facilities in Minnesota have ranged in size from approximately 36 to approximately 90 acres.

A landfill gas electric generation plant would be constructed at an existing landfill, and would not require any land to be taken out of agricultural or other use.

#### **3.4.1.1 Land requirements for water storage**

The Project will not require any land for water storage.

#### **3.4.1.2 Land requirements for cooling system**

The Project will not require any land for a cooling system.

#### **3.4.1.3 Land requirements for solid waste storage**

The Project will require minimal space in the maintenance facility for the storage of used oil and other lubricants, as well as for spare parts and tools.

### **3.4.2 Traffic**

During Project construction, there will be increased traffic on nearby county and township roads. This increase in traffic is not anticipated to exceed the level of traffic that can safely be accommodated. Approximately 50 to 100 construction workers are expected during construction activities.

During the construction phase, several types of light, medium, and heavy-duty construction vehicles will travel to and from the site, as well as private vehicles used by the construction personnel. Based on developer experience, TAWF LLC estimates that the worst-case scenario would be 25 trips per day. That volume would occur during the peak time when the majority of the foundation and tower assembly is taking place. At this time, the majority of the heavy equipment and construction personnel will be present. Other phases of construction would require less equipment and fewer personnel.

The operations phase of the Project will require a two-person maintenance crew that will monitor, maintain, and, when necessary, repair the wind turbines. The maintenance crew will monitor the wind turbines and drive to individual turbines to maintain and repair turbines as needed. There will be a slight increase in traffic for occasional turbine and substation maintenance and repair.

The existing state, county, and township road system will be adequate for ongoing access to the Project areas. Low maintenance gravel access roads will be constructed for access to each turbine location during the Project's construction phase. Those roads will be maintained on an ongoing basis to provide access to the turbines for maintenance.

The Project will not generate any barge or rail traffic.



Traffic generated during construction and operation of other wind energy alternatives would be expected to be the same as for the Project.

The amount of traffic generated by the construction of a biomass facility would be greater than that generated by construction of a wind farm. The operations traffic generated by a biomass facility would depend largely upon the type and location of the biomass fuel, but it would be more than that generated by a wind farm because there would be more employees and the need for fuel delivery would be constant.

There would be some traffic generated by construction of a landfill gas facility, but typically not as much as would be generated during construction of a biomass power plant. There would be no increase in traffic from that generated by the landfill itself once the power plant became operational.

#### **3.4.3 Fuel (For Fossil-Fueled Facilities)**

Because no fossil-fueled alternatives were considered by GRE as potential generation providers in its RFP process, TAWF LLC believes this requirement is inapplicable.

#### **3.4.4 Emissions (For Fossil-Fueled Facilities)**

Because no fossil-fueled alternatives were considered by GRE as potential generation providers in its RFP process, TAWF LLC believes this requirement is inapplicable.

#### **3.4.5 Water Usage for Alternate Cooling Systems**

Only domestic type water supply will be needed to provide potable water for Project workers. A well will be installed adjacent to the Project operations building in accordance with applicable regulations.

Water usage of a biomass facility would depend upon the size and the type facility.

A landfill gas plant would not require any water cooling.

#### **3.4.6 Water Discharges**

No wastewater discharges will occur as a result of the construction or operation of the Project except for domestic-type sewer discharges associated with construction personnel and ongoing operations and maintenance personnel. Temporary sanitary facilities will be provided during construction and the operating facility will include the construction of a septic system in accordance with applicable regulations.

Surface water runoff from the Project areas will be managed similar to pre-existing conditions and will take advantage of the existing county and judicial ditch system. Surface water runoff will be managed in accordance with a construction storm water management plan that will be prepared prior to commencement of construction activities.

Water discharges from a biomass plant would vary by size and type of plant.

A landfill gas plant may generate some water discharge as moisture is released prior to combustion of the collected gas.

### **3.4.7 Radioactive Releases**

The Project will produce no radioactive releases. None of the renewable alternatives considered by GRE in its RFP would have any radioactive releases.

### **3.4.8 Solid Waste**

The only solid wastes generated during the operation of the Project will be will be domestic wastes and used lubricants and other maintenance materials. These wastes and their disposition are summarized in Table 1.

**Table 1: Wastes Generated**

<b>Waste</b>	<b>Solid/ Liquid</b>	<b>Description</b>	<b>Generation Rate</b>	<b>Disposition Method</b>
Oil/Grease	L/S	Hydraulic fluid, lubrication oil, grease	<20 barrels/yr	Used oil recycler, incinerator
Maintenance Materials	S	Oily and greasy rags, materials packaging, cleaning residues, fluorescent light bulbs	<2 tons/yr	Solid waste landfill or, as necessary, hazardous waste treatment/disposal facility

The types and quantities of solid wastes generated by a biomass facility would depend upon the size and type of facility.

It is expected that solid wastes from landfill gas facilities would be minimal and consist mainly of used lubricants.

### **3.4.9 Noise**

The Project will generate noise from two sources: turbine operation and the substation. However, the noise levels fall well within acceptable levels and the project will perform at or below acceptable noise levels.

When in motion, the wind turbines emit a perceptible sound. The level of this noise varies with the speed of the turbine and the distance of the listener to the turbine. On relatively windy days, the turbines create more noise. However, the ambient or natural wind noise level tends to override the turbine noise as distance from the turbines increases. Noise falls off sharply with distance from the noise source. The turbines will be located a minimum of 500 feet from occupied homes, thereby minimizing the potential for noise effects at residences. The combination of preventative maintenance and the advanced turbine technology will greatly minimize the noise sometimes associated by the public with wind energy generation. The combination of background and turbine noise will meet all state standards for noise.

In addition to the wind turbines, there will be some audible noise generated by transformers and conductors at the Project substation. The level of noise will depend on conductor conditions, voltage levels, and weather conditions. Given the noise produced by the Lakefield Junction Generating Station and Martin County Substation, the additional noise produced by the Project substation will not substantially increase noise levels above existing noise levels.

Expected noise sources at a biomass facility would be the combustion equipment, fuel delivery and handling system and any transmission equipment at the facility.

Noise sources at a landfill gas facility would be the generator and any transmission equipment and would be minimal compared to the noise at an operating landfill.

### **3.4.10 Work Force for Construction and Operation**

Construction is expected to start as early as Summer 2004 with a commercial in-service date no later than December 31, 2005. An estimated 50 to 100 construction jobs will be created over the 8-month construction period. Three to five permanent FTE positions are expected to be created when the Project begins operation.

The number of construction and operating jobs at any particular biomass project would depend upon the size and type of the facility.

The number of construction jobs at any particular landfill gas facility would be less than that of a biomass facility. It is not expected that a landfill gas facility would add any jobs in addition to those required by operation of the landfill.

#### **3.4.11 Number and Size of Transmission Facilities**

The Project will be connected to the electrical grid at Xcel's Martin County Substation. The regional transmission system is illustrated on Figure 5.

### **3.5 Facility Information (for alternatives involving construction of a LHVTL)**

Because the RFP considered only renewable energy sources and no alternatives involving construction of a large high voltage transmission line were considered, TAWF LLC submits that this information request is inapplicable.

### **3.6 Map of System**

A one-line schematic of the Projects electrical generation and transmission system accompanies this Application in Figure 4.

### **3.7 Other Facility Information**

#### **3.7.1 Project Dispatch**

The Project's energy will be delivered to the Martin County Substation. At the base of each turbine a step-up transformer will be installed to raise the voltage to the 34.5 kV. Power will be run through an underground collection system to the Project feeder system that will feed power to the point of interconnection. The electrical lines will be buried in trenches adjacent to the Project access roads. At the point where the access and public roads meet, the powerlines will either rise from underground to overhead lines or continue as underground lines. The feeder system will deliver the power to the Project substation located adjacent to Xcel Energy's Martin County Substation at GRE's Lakefield Junction Generating Station. At the Project substation, the power will be stepped up to 345 kV.

#### **3.7.2 Project Operational Data**

Project operational data as required by Minnesota Rules 7849.0250 and 7849.0320 are summarized in Table 2.

**Table 2: Operational Information Summary**

Rule Reference	Description	Project Data
<b>General Data</b>		
7849.0250, A(1)	Nominal generating capability	1500 kW each turbine, 100 MW project total (67 turbines)
7849.0250, A(2)	Operating Cycle	Not applicable
7849.0250, A(2)	Anticipated annual capacity factor	39 %
7849.0250, A(4)	Anticipated heat rate (efficiency)	Not applicable
<b>Fuel Data</b>		
7849.0320, C(1)	Fuel source	Wind
7849.0320, C(2)	Fuel requirement	
	Minimum wind speed	3 m/sec.
	Maximum wind speed	25 m/sec.
7849.0320, C(3)	Heat Input	Not applicable
7849.0320, C(4)	Fuel Heat Value	Not applicable
7849.0320, C(5)	Fuel sulfur, ash and moisture content	Not applicable
<b>Water Use</b>		
7849.0320, E(1)	Estimated maximum groundwater pumping rate	0 gpm, no water required for operation
7849.0320, E(2), E(3)	Estimated annual groundwater appropriation	0 gallons/year, no water required for operation

### 3.7.3 Public Services Affected

The following summarizes public services or infrastructure that may be affected by the Project:

- **Natural Gas.** Access to natural gas will not be necessary for the Project. It is expected that LP gas will be used to heat the project operations building.
- **Public Water System.** No access to a public water supply will be necessary for the Project. Potable water for domestic use at the Project operations building will be furnished with an on-site well.
- **Wastewater Treatment Plant.** No access to a public wastewater treatment plant will be necessary for the Project. Sanitary waste generated at the Project operations building will be disposed of through an on-site septic system.
- **Stormwater.** The Project's stormwater runoff will be discharged to the adjacent county ditch system.
- **Fire Protection.** The Project will subscribe to the local rural fire departments that serve the Project area. No special fire fighting requirements are expected to be associated with the Project.
- **Roads.** The existing county and township roads in conjunction with the access roads that will be constructed as part of the Project will provide adequate project access.
- **Telecommunications.** The Project will utilize a private dedicated communications system to provide operational information from the turbines to the operations center. Local telephone service will be utilized at the operations building for external communications.
- **Electrical Service.** The Project's turbines and operations building will obtain electrical service from South Central Electric Association.

### 3.8 Other Filings and Permits

TAWF LLC has applied for a variance from several of the informational requirements of Minnesota Rules 7849.0010 et seq. The variance request is contained in the transmittal letter accompanying this Application.

#### 3.8.1 CON Application Exemptions

Minnesota Rules Chapter 7849 allows all applicants for a Certificate of Need to request exemptions from certain data elements that are unnecessary to determine the need, may be satisfied by another document, or are not reasonably available or applicable. TAWF LLC is requesting no exemptions.

### **3.8.2 Environmental Report**

Minnesota Environmental Quality Board (“MEQB”) regulations (Minn. Rules 4410.7000) specify that the environmental review required under Minnesota Statutes Chapter 116C for large electric power generating plants (“LEPGPs”) shall consist of an environmental report at the Certificate of Need stage and an environmental impact assessment at the site permit stage. It is expected that the Department of Commerce or the MEQB will be designated to prepare the Environmental Report for inclusion in the record in the Certificate of Need hearings for the Project. Minnesota Rules 7849.0310 requires applicants for Certificates of Need to submit environmental information detailed throughout Chapter 7849. TAWF LLC will furnish such environmental information.

### **3.8.3 Site Permit**

Minnesota Rules Chapter 4401 specifies the form and content of the application to obtain a Site Permit for a Large Wind Energy Conversion System (“LWECS”). The proposed project meets the definition of an LWECS, which is “a combination of wind energy conversion systems with a combined nameplate capacity of 5,000 kW or more.” The proposed project will have a nameplate capacity of 100,000 kW. TAWF LLC will file the Site Permit application with the MEQB.

### **3.8.4 Route Permit**

A Project transmission route permit is not required since there will be a direct connection to Xcel’s Martin County Substation

### **3.8.5 Other Project Permits**

Project permits and approvals that may be necessary to complete the Project are listed in Table 3. TAWF LLC will obtain these approvals, as necessary, prior to project construction.

**Table 3: Project Permits and Approvals**

Agency	Permit/Approval	Authority	Description
FAA	Notice of Proposed Construction or Alteration	14 CFR Chap 1 Subchapter E Part 77	Establishes standards for determining obstructions and sets requirements for notice to Administrator for proposed construction.
USFWS	Consultation and Review of the Proposed Project regarding Federally Threatened and Endangered Species	Endangered Species Act of 1973	The Act requires all projects that are in areas designated to be habitat for endangered species to be reviewed by FWS.
COE	Section 404 Permit	Clean Water Act	Required for activities that involve dredging or filling wetlands and waters of the U.S.
MN PUC	LEGF Certificate of Need	MN Rules 7849	For wind turbines and transmission interconnection (as associated facility).
MN EQB	Site Permit	MN Rules 4401	For wind turbines—meet threshold for LWECS requiring permit.
MN EQB	Route Permit	MN Rules 4400	For transmission interconnection—meet threshold for HVTL requiring permit.
MN State Historic Preservation Office	Cultural and Historic Resources Review	National Historic Preservation Act; Historic Sites Act (Minn. Stat. 138.661-138.669); Field Archaeology Act (Minn. Stat. 138.31-138.42); Private Cemeteries Act (Minn. Stat. 307)	Cultural Resources Review and State and National Register of Historic Sites Review.
MPCA	401 Certification	Clean Water Act	When a federal permit is required (i.e. Section 404 Permit with the Corps of Engineers) a State Water Quality Certification/Waiver is needed.
MPCA	NPDES Stormwater Permit for Construction	Clean Water Act	Program designed to reduce the amount of sediment and pollution entering surface and groundwater during and after construction projects.
MPCA	Small Quantity Generator	MN Rules 7045	Hazardous Waste rules regarding storage and disposal of turbine lubricating oil.
MN DNR	Consultation and Review of the Proposed Project regarding State Threatened and Endangered Species	Minn. Stat. §84.0895	Establishes Guidelines for the protection of Threatened and Endangered species in the State of Minnesota.
MN DNR	Public Water Works	Minn. Stat. §103G.005	Applies to activities conducted below the Ordinary High Water Level of public waters and public waters wetlands.
MN DNR	License to Cross Public Lands and Waters	Minn. Stat. §84.415	Required for utilities passing over, under, or across state lands and public waters.



Agency	Permit/Approval	Authority	Description
MDH	Water Well Permit	MN Well Code (Minn. Stat. §103I); Safe Drinking Water Act	Ensures development and protection of groundwater in an ordinary, healthful, and reasonable manner.
MDH	Plumbing Plan Review	MN Rules 4715.3130	Ensures healthy and safe plumbing installation.
BWSR	Wetland Conservation Act Approval	Minn. Stat. §103G.222-103G.2373; MN Rules 8420	Requires proposed impacts to wetlands be avoided and minimized.
Jackson County	Building Permits	County Ordinance	
Jackson County	Individual Septic Tank Systems (ISTS) Permit	County Ordinance	
Jackson County	Driveway Permit		
Jackson County	Utility Permit		
Jackson County	Moving Permit		Needed to permit oversized loads on county roads.
Martin County	Building Permits	County Ordinance	
Martin County	Individual Septic Tank Systems (ISTS) Permit	County Ordinance	
Martin County	Driveway Permit		
Martin County	Utility Permit		
Martin County	Overwidth/Overweight Permit		Needed to permit oversized loads on county roads.
Kimball and Cedar Townships	Township Approvals		

## 4.0 Peak Demand and Annual Consumption Forecast

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TAWF LLC acknowledges its responsibility to provide the Commission with applicable information under this and all sections of the Certificate of Need Application but respectfully submits that this particular information requirement is inapplicable to the Project. TAWF LLC does not generate a demand and consumption forecast. Moreover, TAWF LLC intends to sell the entire Project output to GRE so that GRE can meet the Renewable Energy Objective. The demand for the energy that TAWF LLC will provide has been satisfied by the Project's selection by GRE as the successful proposal in a competitive bidding process. TAWF LLC does provide the Commission the following information on regional energy demand.

### 4.1 Annual Electrical Consumption in Minnesota

There is a critical need for additional energy production in Minnesota and the MAPP region. In their most recent Integrated Resource Plans ("IRPs"), every major electric utility in the region reported a supply deficit by 2015. The May 1, 2002, Mid-Continent Area Power Pool ("MAPP") Load and Capability Report stated that, under the minimum reserve requirements, deficits were expected as soon as 2005. MAPP members were urged to build additional capacity in order to maintain reserve levels higher than the MAPP minimum. Table 4 outlines the MAPP surplus/deficit forecasts through 2011.

**Table 4: MAPP Summer Season Surplus/Deficit \***

Year	MW	Reserve Margin Percentage
2003	1635	21.2%
2004	696	17.6%
2005	-211	14.2%
2006	-492	13.3%
2007	-648	12.8%
2008	-1326	10.5%
2009	-1348	10.5%
2010	-2078	8.2%
2011	-2567	6.7%

\* From Line 22 of the MAPP 2002 Load and Capability Report

While the deficits have been identified, the new sources to fill these voids have not. Minnesota has the unique opportunity to begin providing capacity to meet those forecasted deficits with clean, efficient, renewable energy. TAWF LLC intends to be a significant source of energy for meeting the region's needs over the next 30 years.

## **4.2 Estimates of Ultimate Consumers and Consumption**

As an IPP that intends to sell its entire output to GRE, TAWF LLC submits that this information request is inapplicable.

## **4.3 Forecast Methodology**

TAWF LLC is an IPP. As such, TAWF LLC has not developed a forecast methodology and submits that this information request is inapplicable.

## **4.4 Forecast Data Base**

TAWF LLC has no forecast data base and submits that this information request is inapplicable.

## **4.5 Assumptions and Special Information**

TAWF LLC submits that this information request is inapplicable.

## **4.6 Coordination of Forecasts**

TAWF LLC submits that this information request is inapplicable.

## **5.0 System Capacity**

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As a newly-formed IPP, TAWF LLC has no existing system and, therefore, submits that this section of the Application is inapplicable.

## **6.0 Conservation Programs**

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As a newly-formed IPP, TAWF LLC submits that this information request is inapplicable.

## 7.0 Consequences of Delay

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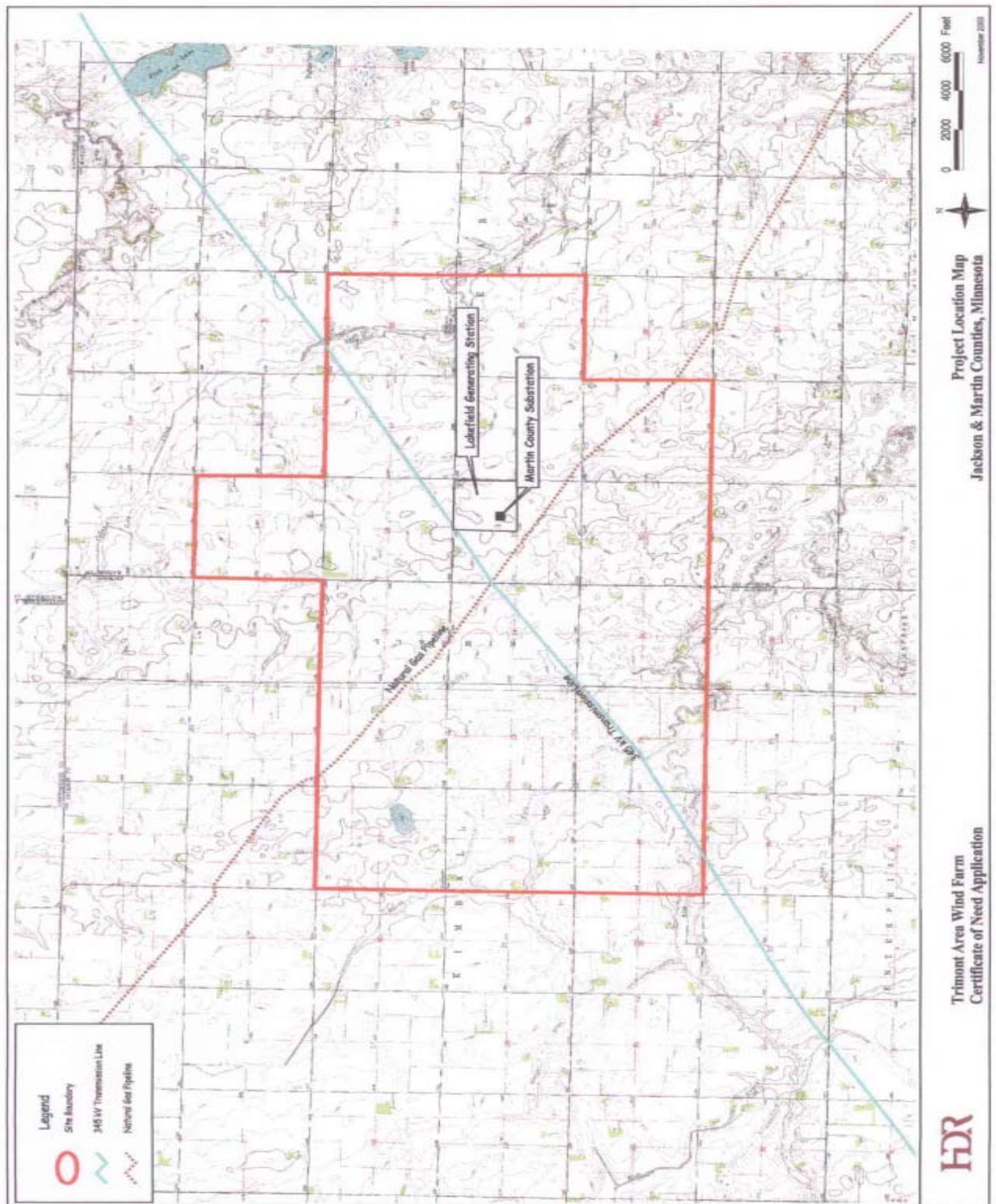
The primary consequences of delaying implementation of the Project would be that TAWF LLC would not be able to fulfill its obligations to GRE to develop the facility. As such, GRE would be required to make more purchases of higher priced energy on the open market. This would also result in a significant hindrance to GRE's ability to meet the Renewable Energy Objective. Moreover, pricing for the Project was predicated on beginning commercial operations on or before Dec. 31, 2004 to achieve depreciation benefits, reduce carrying costs of development assets, and to take advantage of production tax credits. An additional consequence of delay would be the lost opportunity to provide a regional infusion of clean, cost-effective renewable energy. As shown in Table 4, MAPP does deficit in the 2005 summer season. The TAWF Project will serve to reduce that deficit by producing clean, renewable wind energy.

## **8.0 Alternative of No Facility**

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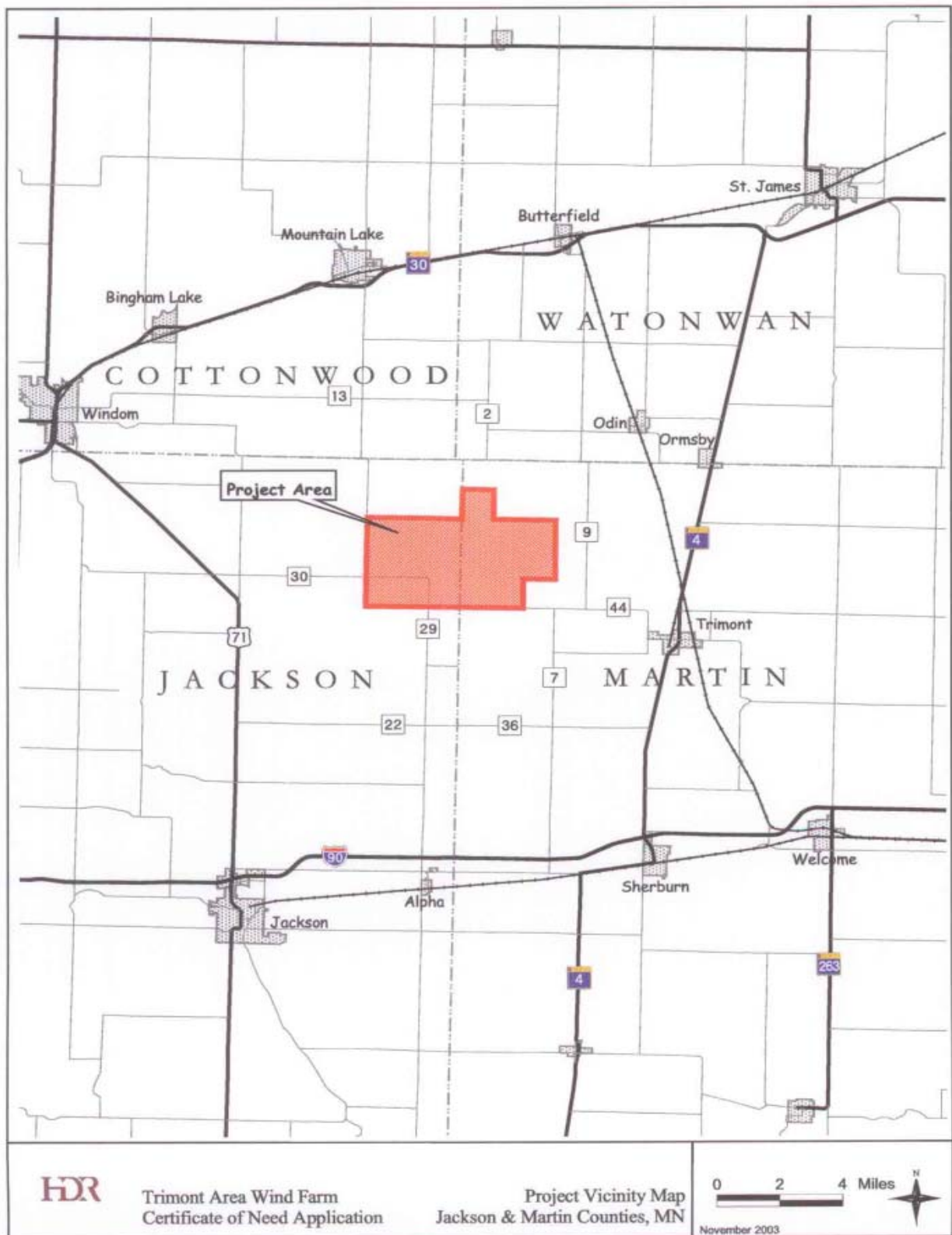
The consequences of not building the TAWF Project will be an increase in GRE's purchases of more costly energy on the open market. Additionally, it will accelerate the GRE's need to build new fossil-fueled facilities. Finally, not implementing the TAWF LLC Project into GRE's renewable energy portfolio will significantly encumber GRE's ability to meet its renewable energy objectives.

Not implementing the facility into GRE's renewable portfolio will also make it more costly to GRE to obtain renewable energy in the future because of the development of other wind energy facilities and the resulting decline in the number of high quality wind resource sites in the state. It is thus imperative that this Application be granted in order to provide the maximum rate benefit to GRE's member-consumers.

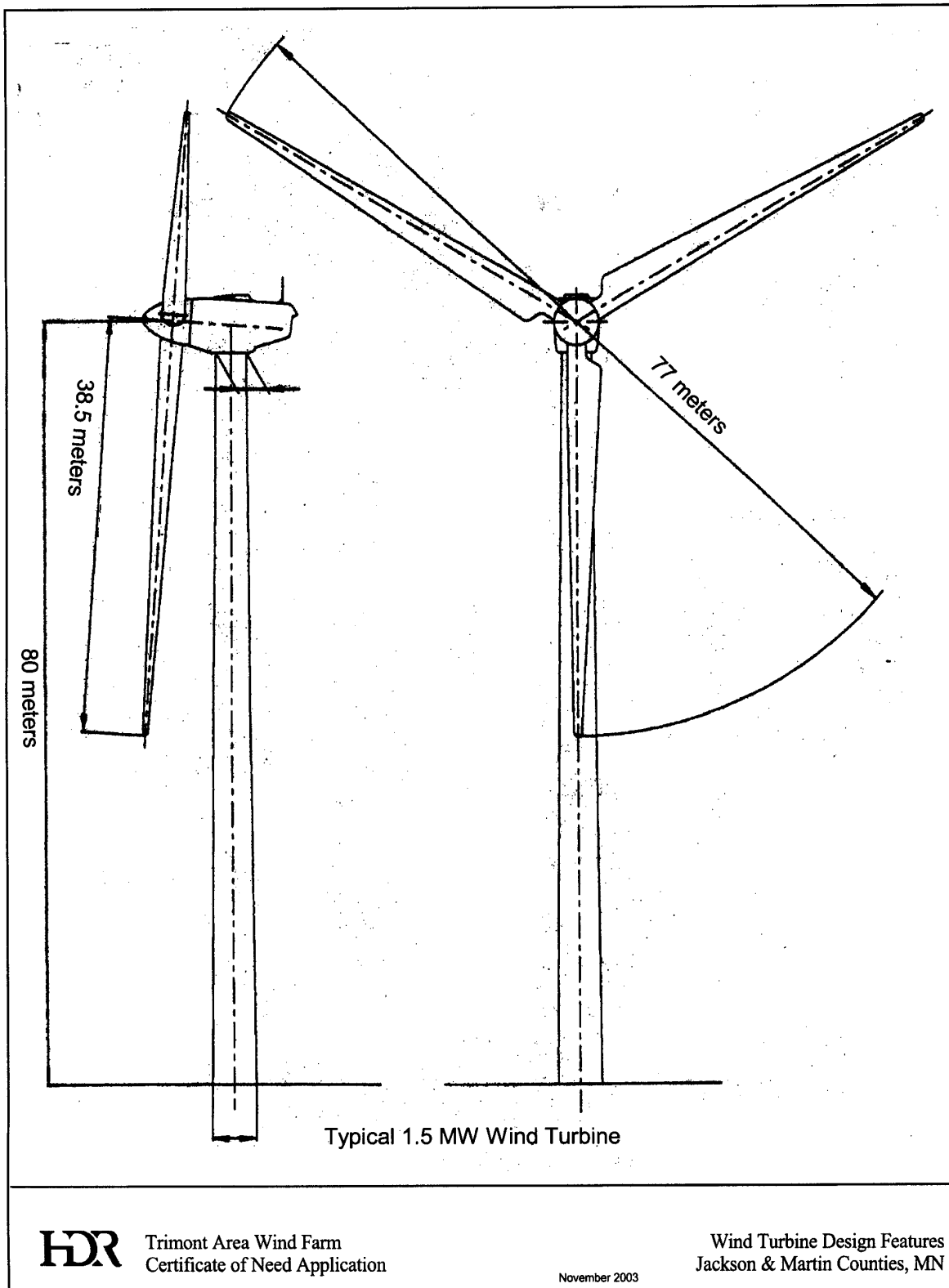


**Figure 1 – Project Location Map**

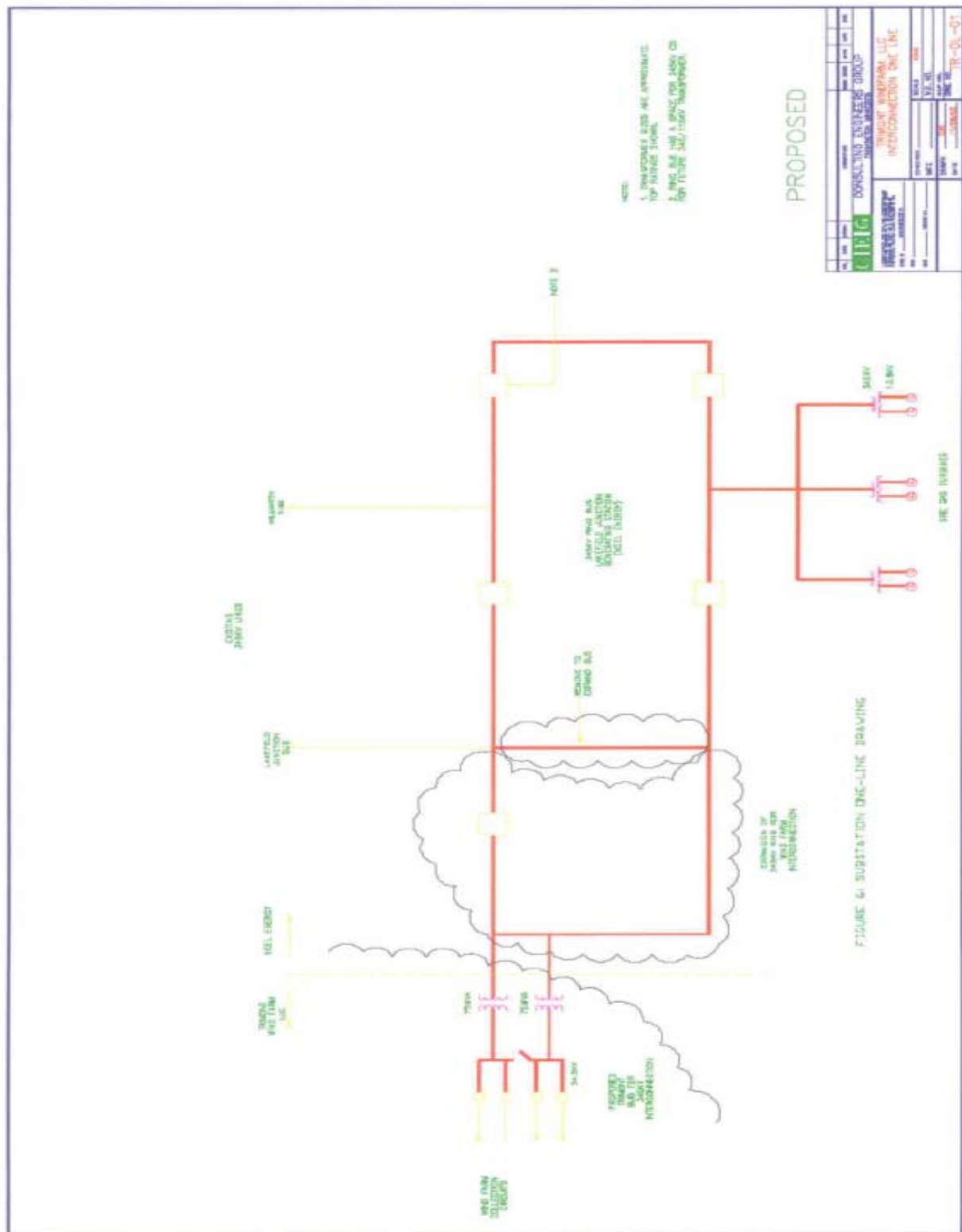




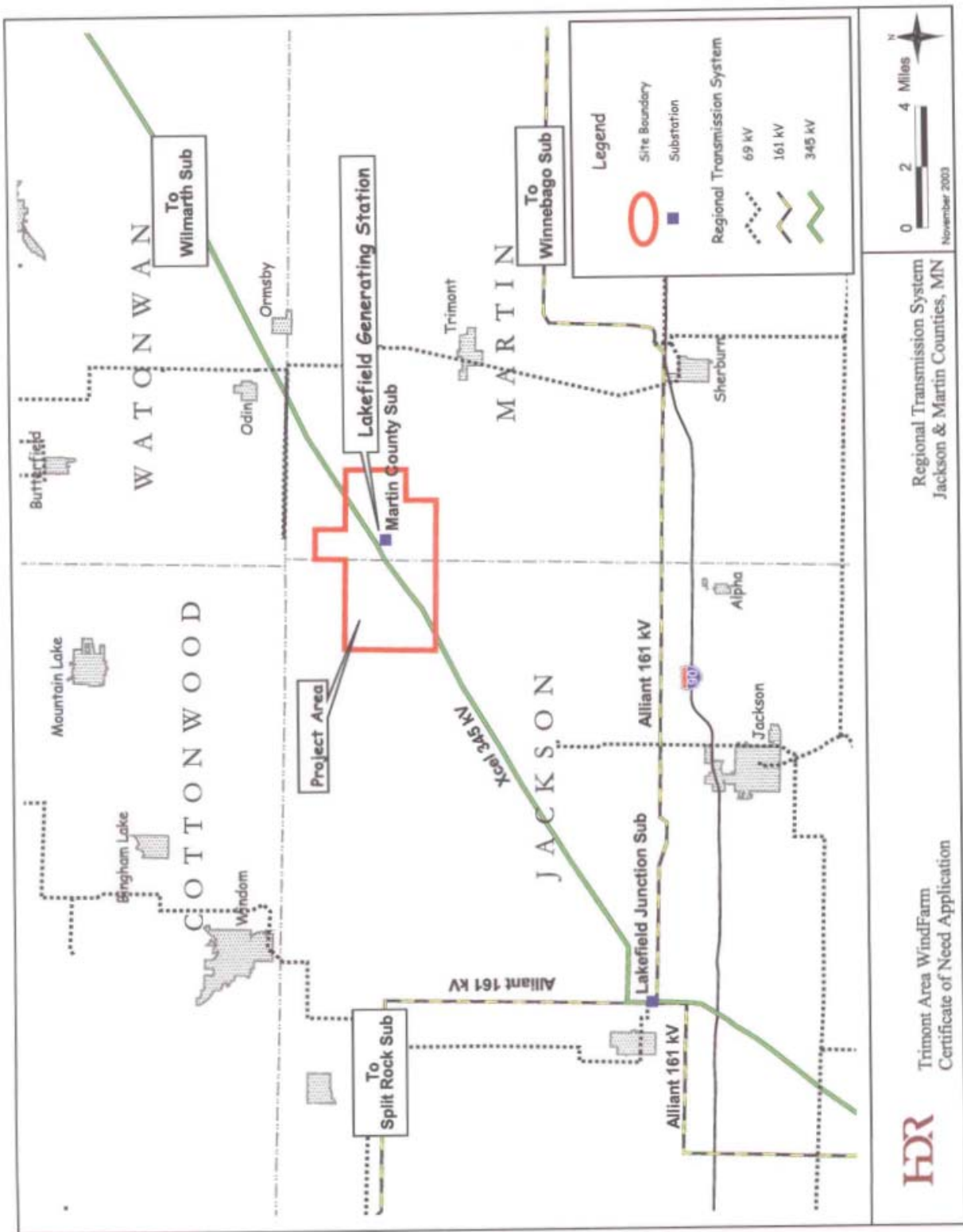
**Figure 2 – Project Vicinity Map**



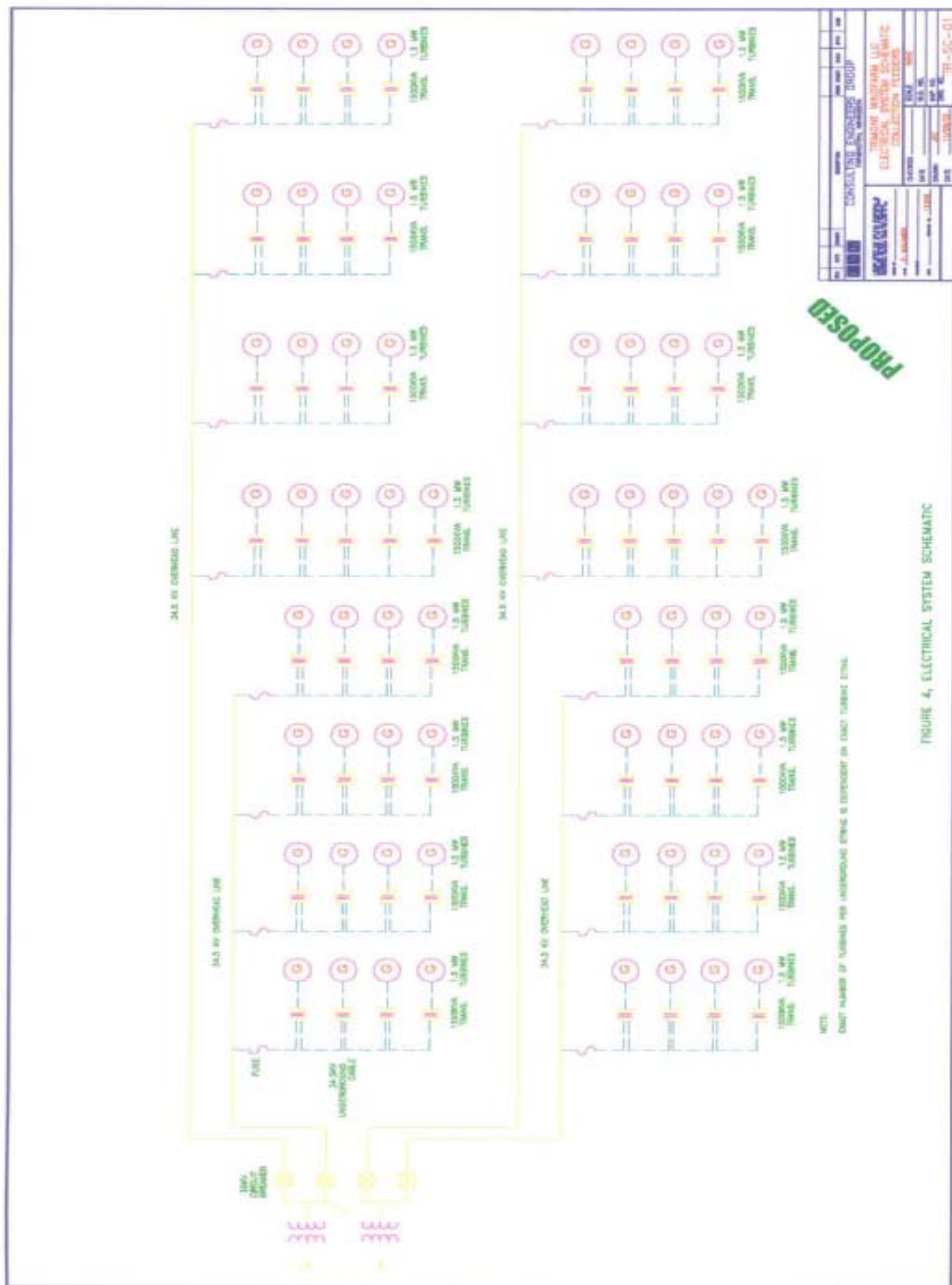
**Figure 3 – Wind Turbine Tower**



**Figure 4 – Electrical System Schematic**



**Figure 5 – Regional Transmission System**



### Figure 6 Substation 1-Line Drawing